

WHAT IS CLAIMED IS:

1. A nucleic acid molecule or analog thereof which specifically binds to a target nucleic acid through a sequence which is substantially complementary to a sequence of the target nucleic acid, said nucleic acid molecule or analog thereof being capable of
5 topologically linking to at least a portion of said target nucleic acid through the interaction between the 5' and 3' ends of said nucleic acid molecule or analog thereof, said topological linkage effectively reducing the efficiency of transcription or translation of said target nucleic acid.
2. The nucleic acid molecule or analog thereof of Claim 1 which comprises
10 catalytic RNA.
3. The nucleic acid molecule or analog thereof of Claim 2, wherein said catalytic RNA is a catalytic region derived from the hairpin ribozyme.
4. The nucleic acid molecule or analog thereof of Claim 2, wherein said catalytic RNA is connected to said sequence which is substantially complementary to a
15 sequence of the target nucleic acid through a bond or a linker.
5. The nucleic acid molecule or analog thereof of Claim 2 which further comprises a triplex-forming region that interacts with the duplex formed between said nucleic acid molecule or analog thereof and said target molecule through the formation of Hoogsteen or reverse Hoogsteen bonds.
- 20 6. The nucleic acid molecule or analog thereof of Claim 5, wherein the triplex-forming region forms one fewer helical turn than said duplex so as to ensure topological linkage of said nucleic acid molecule or analog thereof to said target nucleic acid.
7. The nucleic acid molecule or analog thereof of Claim 1, wherein said interaction between the 5' and 3' ends of said nucleic acid molecule or analog thereof is
25 by covalent bonding, Watson-Crick pairing, Hoogsteen bonding, reverse Hoogsteen bonding or other noncovalent interaction.

8. The nucleic acid molecule or analog thereof of Claim 1, wherein said 5' and said 3' ends of said nucleic acid molecule or analog thereof do not interact until after said nucleic acid molecule or analog thereof binds to said target nucleic acid.

9. A nucleic acid molecule or analog thereof which specifically binds to a target nucleic acid through a sequence which is substantially complementary to a sequence of the target nucleic acid, wherein the 5' and 3' ends of said nucleic acid molecule or analog thereof interact to form a binding site for a locking molecule and wherein the binding of said locking molecule to said binding site causes said nucleic acid molecule or analog thereof to become topologically linked to said target nucleic acid, thereby effectively reducing the efficiency of transcription or translation of said target nucleic acid.

10. The nucleic acid molecule or analog thereof of Claim 9 which is RNA or DNA.

11. The nucleic acid molecule or analog thereof of Claim 9 which interacts with said target nucleic acid by Watson-Crick base pairing, Hoogsteen base pairing or reverse Hoogsteen base pairing.

12. The nucleic acid molecule or analog thereof of Claim 9, wherein said 5' and 3' sequences which interact to form said binding site are identified through combinatorial library screening.

13. The nucleic acid or analog thereof of Claim 9, wherein said locking molecule is selected from the group consisting of a protein, a metal ion, a metal complex, a drug, an organic molecule and an inorganic molecule.

14. The nucleic acid molecule or analog thereof of Claim 13, wherein said protein is c-myc, n-myc or l-myc.

15. The nucleic acid molecule or analog thereof of Claim 13 wherein said locking molecule is zinc-, copper-, cobalt- or a platinum-containing molecule.

16. The nucleic acid molecule or analog thereof of Claim 9 which comprises at least one phosphorothioate internucleotide linkage.

17. The nucleic acid molecule or analog thereof of Claim 9 which comprises a competing internal structure which is competed out by binding of said locking molecule.

5 18. A method for inhibiting the transcription or translation of a target nucleic acid molecule, said method comprising:

contacting said target nucleic acid molecule with a nucleic acid molecule or analog thereof according to Claim 1 or Claim 9, wherein said nucleic acid molecule or analog thereof becomes topologically linked to said target nucleic acid molecule, thereby

10 inhibiting transcription or translation therefrom

19. A method of covalently bonding a platinum molecule to an oligonucleotide, said method comprising:

combining said oligonucleotide with (1) a platinum donor molecule and (2) a positively charged polyamine molecule under conditions that allow covalent bonding of
15 said platinum molecule to said oligonucleotide,

wherein said platinum molecule becomes covalently bound to said oligonucleotide.

20. The method according to Claim 19, wherein said platinum donor molecule and said positively charged polyamine molecule are complexed prior to combining with said oligonucleotide.

20 21. The method according to Claim 19, wherein said platinum molecule becomes covalently bound to a sulfur molecule or an N7 of a guanine residue of said oligonucleotide.

22. An oligonucleotide obtained by the method according to Claim 19.

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23. A method for detecting the presence of a target molecule in a composition suspected of containing said target molecule, said method comprising:

contacting said composition with a catalytically inactive RNA molecule which is capable of binding to said target molecule, wherein binding of said catalytically inactive

5 RNA molecule to said target molecule allows said catalytically inactive RNA molecule to become catalytically active,

wherein the observance of the presence of catalytically active RNA is indicative of the presence of said target molecule in said composition.

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